Case 3028

Aphanius Nardo, 1827 (Osteichthyes, Cyprinodontiformes): proposed placement on the Official List

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Abstract. The purpose of this application is to conserve the name *Aphanius* Nardo, 1827 for a genus of Palaearctic fishes (family CYPRINODONTIDAE). The name has been in uninterrupted use since at least 1926 but a few authors have recently replaced it with *Lebias* Goldfuss, 1820, a name which, with a single exception in 1895, had remained unused since 1846 until resurrected in 1995 and which does not refer to the same taxon as *Aphanius*. *Aphanius* includes at least 17 extant species and fossil remains have been reported from Miocene deposits.

Keywords. Nomenclature; taxonomy; *Aphanius*; *Cyprinodon*; *Lebias*; CYPRINODONTIDAE; *Aphanius fasciatus*; *Cyprinodon variegatus*; tooth carps; freshwater; brackish water; Palaearctic.

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1. The name *Aphanius* Nardo, 1827 (ref. 1827a, pp. 34, 39-40; also published in 1827b, col. 487) relates to a genus of fresh and brackish water tooth carps (family CYPRINODONTIDAE) with a wide distribution, basically peri-Mediterranean, extending from Portugal and Morocco to Pakistan. The genus was established with two originally included nominal species, *A. nanus* and *A. fasciatus*, both of Nardo (1827a, pp. 34, 40; 1827b, col. 488). Jordan (1917, p. 121) selected *A. nanus*, a junior synonym of *Lebias fasciata* Valenciennes in Cuvier & Valenciennes, 1827, as the type species (see para. 9). The genus now includes at least 17 species and subspecies, although it is likely that the number is much greater, and several have very restricted distributions in arid zones. Several populations and species are now seriously threatened by depletion of water resources for urban and agricultural use, pollution and introductions and are given local protection and listed by international agencies (for example, the *1996 IUCN Red List of Threatened Animals*). Fossil remains identified as *Aphanius* have been reported from Miocene deposits.

2. The name *Aphanius* has been in uninterrupted use since at least 1926 but it has recently been treated by a few authors as a junior synonym of *Lebias* Goldfuss, 1820. This latter name has for more than 150 years been considered a junior synonym of *Cyprinodon* La Cepède, 1803 and, with a single exception in 1895, remained unused since 1846 until resurrected in 1995. However, the (1995) type species designation

which was supposed to render *Aphanius* a synonym of *Lebias* is invalid. To secure the continued and unhindered use of the name *Aphanius* we propose that it be placed on the Official List.

3. The history of the name *Lebias* is as follows. Cuvier (1816, p. 199) proposed a new genus of tooth carps using the vernacular name 'Le Lebias'. He did not mention species by name. Oken (1817, p. 1183), in a commentary on Cuvier's classification and a comparison between the latter and his own, adopted the Latin name *Lebia* and, by reference to Cuvier, rendered the name available (see Gill, 1903, p. 967). There were no included species. The name *Lebia* Oken is, however, a junior homonym of *Lebia* Latreille, 1802, a much used name in Coleoptera.

4. The tooth carp genus was subsequently briefly described by Goldfuss (1820, p. 16) who, like Oken, referred to Cuvier (1816) but used the spelling *Lebias*. Since *Lebia* Oken is a junior homonym (para. 3 above), the synonym *Lebias* Goldfuss, 1820 would be the valid name for the genus (if it were separated from *Cyprinodon* La Cepède, 1803; see para. 6 below). Again there were no originally included species (Goldfuss noted 'Arten sind noch nicht beschrieben'). The first subsequent mention of the genus, which also included a nominal species, was by Le Sueur (1821) who, like Goldfuss (1820), referred to Cuvier (1816) but used *Lebia*, the same spelling as Oken. Le Sueur (p. 6) placed in the genus the single nominal species *Lebia ellipsoidea* Le Sueur, 1821 from Florida. Also in 1821, Valenciennes (in Humboldt & Valenciennes, p. 159) referred to the genus 'que M. Cuvier a établi' under the name *Lebias* and named Cuvier's (1816) two new species: *L. rhomboidalis* Valenciennes, 1821 (p. 160, pl. 61, figs. 3, 7) from North America and *L. fasciata* Valenciennes, 1821 from Europe (p. 160, pl. 61, fig. 4). Le Sueur's work was published in January 1821 (as recorded in vol. 2 of the *Journal of the Academy of Natural Sciences of Philadelphia*, in vol. 1, p. 8 of the *Proceedings of the Academy* . . . (1841), and in the 'Index to the scientific contents of the Journal and Proceedings of the Academy . . . 1812–1912' (1913)), while Valenciennes's publication can be dated only to the year 1821 (see Sherborn, 1899, p. 428; Lazara, 1993, p. 1160; and Kottelat, 1997, p. 162). It is clear from Oken (1817), Goldfuss (1820) and other early authors that both *Lebia* and *Lebias* are spellings derived from Cuvier's (1816) vernacular 'Le Lebias' and no author (except Lazara, 1995; see para. 8 below) has ever regarded them as distinct. *Lebia ellipsoidea* Le Sueur, 1821 from Florida is thus the type species of *Lebias* Goldfuss, 1820 by subsequent monotypy.

5. Lazara (1995), putatively acting as the First Revisor, selected *Lebia* as the valid spelling from Le Sueur (1821). His action was invalid, however, because both the spellings *Lebia* and *Lebias* had been published before Le Sueur (1821), by Oken (1817) and Goldfuss (1820) respectively. In any case, Le Sueur (pp. 2, 5, 7) consistently adopted the spelling *Lebia*; on p. 5 'the Lebias' was a plural vernacular use, and on pl. 2 the spelling '*Lebias*' was probably an engraver's error (the specific name *ellipsoidea* was misspelt as '*elipsoides*', and the generic name '*Mollinesia*' in the text was spelt '*Molienisia*' on pl. 3, both being misspellings of *Mollienesia*).

6. In 1846 Valenciennes (in Cuvier & Valenciennes, p. 145) included both the New and Old World cyprinodont species in *Cyprinodon* La Cepède, 1803, giving *Lebias* (which he cited from Cuvier, 1816) as a junior synonym. Valenciennes synonymised his (1821) American species *L. rhomboidalis* with *C. variegatus* La Cepède, 1803 (pp. 486, 487), described from Charleston Bay and the type species of *Cyprinodon* by

monotypy. Valenciennes (pp. 146–151) considered that Cuvier (1816) had made a number of errors in his original description of 'Lebias', and stated that this description and those of the two nominal species *C. variegatus* and *L. rhomboidalis* had all been based on the same two specimens in the Muséum National d'Histoire Naturelle in Paris. In discussing Cuvier's work he noted 'Il y a là une suite de méprises; car il est évident que le genre *Lebias* a été créé pour un poisson qui n'est autre chose que le cyprinodon varié' (i.e. *Cyprinodon variegatus*). Valenciennes (1846, pp. 173–178) also included in *C. variegatus* the nominal species *Lebias* (sic) *ellipsoidea* Le Sueur, 1821, new material from Lake Pontchartrain, near New Orleans, having been sent to the Paris Museum. Valenciennes (1846, pp. 156–159) retained the name *C. fasciatus* (Valenciennes, 1821) for the European cyprinodont species. Günther (1866, pp. 302, 305) also listed New and Old World cyprinodont species under *Cyprinodon* La Cepède, 1803, citing *Lebias* and *Aphanius* as synonyms and, like Valenciennes (1846), considered *C. variegatus*, *L. rhomboidalis* and *L. ellipsoidea* to refer to the same species. The synonymy of *L. ellipsoidea* with *C. variegatus* rendered the name *Lebias* Goldfuss, 1820 a junior subjective synonym of *Cyprinodon*.

7. Garman (1895, p. 20) also cited *L. ellipsoidea* Le Sueur, 1821 as a synonym of *C. variegatus* La Cepède, 1803; he used (pp. 19–29) the name *Cyprinodon* for New World species and (pp. 29–34), overlooking the consequences of the synonymy of *L. ellipsoidea* with *C. variegatus*, resurrected *Lebias* for Old World species, including *C. fasciatus* (Valenciennes, 1821), and treated *Aphanius* as a junior synonym. Like Günther (1866; see para. 6 above), Boulenger (1907, pp. 406–412) used *Cyprinodon* for both New and Old World species, citing *Lebias* and *Aphanius* as synonyms, and the name *Lebias* dropped from use. Hubbs (1926, p. 16) again separated New and Old World species, adopting the names *Cyprinodon* and *Aphanius* respectively. He was followed by Myers (1931), who commented (p. 12) that '*Lebias* is a synonym of *Cyprinodon*, and the European forms belong to *Aphanius*', Myers (1935, p. 303) and Miller (1948, p. 21), who commented that *Aphanius* was 'formerly [i.e. by Garman, 1895] called *Lebia* or *Lebias*, a synonym of *Cyprinodon*'. The name *Lebias* had not been used for more than a century until resurrected by Lazara in 1995.

8. Lazara (1995) attempted to separate the spellings *Lebia* and *Lebias* and to apply them to different taxa. He recognised *Lebia*, as of Le Sueur (1821), as a junior synonym of *Cyprinodon*, and by designating *Lebias fasciata* Valenciennes, 1821 as the type species of *Lebias* Goldfuss, 1820, sought to reintroduce *Lebias* in place of *Aphanius* Nardo, 1827 as the name for Old World cyprinodonts (see para. 9 below). As recorded in para. 4 above, *Lebias* and *Lebia* are variant spellings of the same name, i.e. both were based on Cuvier's 'Le Lebias', and *Lebias*, dating from Goldfuss (1820), is the (potentially) valid spelling. The type species of *Lebias* is the American species *Lebia ellipsoidea* Le Sueur, 1821 by subsequent monotypy and Lazara's (1995) type species designation is invalid. Lazara (1995) acknowledged that the name *Aphanius* had been in use for many years.

9. As noted in para. 1 above, Jordan (1917) selected the first of the nominal species (*A. nanus* Nardo, 1827) included in *Aphanius* Nardo, 1827 as the type species of the genus. He recorded *Aphanius* as a valid genus 'replacing *Lebias* of authors (not of Cuvier)'. *Aphanius nanus* has been treated as a synonym of *A. fasciatus* Nardo, 1827 and of *Lebias fasciata* Valenciennes, 1821 since at least Garman (1895, pp. 29, 30)

and Boulenger (1907, p. 407), and *A. fasciatus* (Valenciennes, 1821) is thus the valid name for the type species of *Aphanius* (see Wildekamp, 1993, p. 48).

10. Very few authors have followed Lazara (1995) in his use of the name *Lebias* in place of *Aphanius*. The overwhelming use is of the latter name, both in works on taxonomy of Recent and fossil species and in the applied fields of biology, reproduction, genetics, biochemistry, hybridisation, physiology and ecology. Recent representative works, covering systematics, checklists, field guides and conservation documents, in which *Aphanius* has been used are Economidis (1991, 1992), Doadrio, Elvira & Bernat (1991), Gandolfi, Zerunian, Torricelli & Marconato (1991), Wildekamp (1993), Coad (1996), Ferrito & Tigano (1996), Maitland & Crivelli (1996), Kottelat (1997), Maitland (2000), and several papers in the publications edited by Crivelli & Maitland (1995) and by Kirchhofer & Hefti (1996). A search of *Zoological Record on CD* (vols. 115–136) showed a further 162 publications in which the name *Aphanius* has been used between 1978 and 2000 (the complete list is held by the Secretariat of the Commission). It is very desirable that the use of the name *Aphanius* be continued in local, regional, national and international legal instruments, conservation policy documents and Red Lists; a change of name would seriously threaten the efficiency of conservation measures for many of the species concerned, several of which are in danger of immediate extinction.

11. As demonstrated above, the names *Lebia* Oken, 1817 and *Lebias* Goldfuss, 1820 both refer to the same taxon, as had always been accepted until Lazara (1995). The type species is *Lebia ellipsoidea* Le Sueur, 1821 (see para. 4 above), which is a junior subjective synonym of *Cyprinodon variegatus* La Cepède, 1803, the type species of *Cyprinodon* La Cepède, 1803; accordingly *Lebia* and *Lebias* are junior synonyms of *Cyprinodon*. However, Lazara (1995), following Garman (1895), misinterpreted *Lebias* and adopted it instead of *Aphanius* Nardo, 1827 as the valid name for Old World species of tooth carps, even though he acknowledged that *Aphanius* had been in use for many years. In the interests of stability and to avoid misunderstanding, we propose that *Aphanius* should be placed on the Official List and that the name *Lebias* Goldfuss, 1820 should be suppressed.

12. The International Commission on Zoological Nomenclature is accordingly asked:

(1) to use its plenary power to suppress the name *Lebias* Goldfuss, 1820 for the purposes of the Principle of Priority but not for those of the Principle of Homonymy;

(2) to place on the Official List of Generic Names in Zoology the name *Aphanius* Nardo, 1827 (gender: masculine), type species by subsequent designation by Jordan (1917) *Aphanius nanus* Nardo, 1827 (a junior subjective synonym of *Lebias fasciata* Valenciennes in Humboldt & Valenciennes, 1821);

(3) to place on the Official List of Specific Names in Zoology the name *fasciata* Valenciennes in Humboldt & Valenciennes, 1821, as published in the binomen *Lebias fasciata* (senior subjective synonym of the specific name of *Aphanius nanus* Nardo, 1827, the type species of *Aphanius* Nardo, 1827);

(4) to place on the Official Index of Rejected and Invalid Generic Names in Zoology the following names:

(a) *Lebia* Oken, 1817 (a junior homonym of *Lebia* Latreille, 1802);

(b) *Lebias* Goldfuss, 1820 (suppressed in (1) above).

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